

Appl. No. **10 731 757**
Amdt. dated November 25, 2005
Reply to Office action mailed May 24, 2005

REMARKS/ARGUMENTS

Applicants are claiming domestic, not foreign, priority to the PCT applications. The undersigned has been advised that Applicants are not required to submit certified copies of PCT applications when claiming domestic priority since a PCT application is given the same effect as an application filed in the U.S. With regard to Korean priority documents, a certified copy of KR2001/31956 was provided in PCT/KR01/02261 and a certified copy of KR2001/31959 was filed in PCT/KR01/02262.

The status of the parent applications has been updated to include the patent number of Serial No. 10/223,450. The translation misspelling of oxaphosphorane has been corrected to properly read "oxaphospholane". Other paragraphs relating to the Formula V have been amended to change the "R" designation to "R'" to avoid confusion with the "R" designation in Formula I.

Claims 6 and 16 have been amended to remove the Markush language and the phrase "such as". Claims 4 and 5 directed to compositions of claims 1 containing phosphoric acid ester morpholides represented by Formula V have been replaced by claims 19 and 21. The "R" designation has been changed to "R'" to avoid confusion with the "R" designation in Formula I of claim 1. Claims 14 and 15 have been replaced by claims 24 and 26 for the same reason. No new matter has been added by the amendments.

New claims 20 and 25 are directed to preferred species of the phosphoric acid ester morpholides. A Credit Card Payment form for \$100 for the two additional claims in excess of twenty is attached.

Status of the Claims

Claims 1-3, 6-13, and 16-26 are pending and under consideration. Claims 19-26 are added by this Amendment.

Statement of the Rejections

Claim 6 as originally presented was rejected under 35 U.S.C. §112, second paragraph. The claim has been amended to delete “such as” and is in conformity with 35 U.S.C. §112.

Claims 1-3, 6, and 7 stand rejected under 35 U.S.C. §103 as unpatentable over Ohtsuka et al. in view of Morgan et al. Ohtsuka et al. disclose compositions of a base thermoplastic resin, a thermosetting epoxy resin and a thermosetting phenolic resin. The reference lists “flame retardants” among possible additives but does not describe or disclose any specific flame retardants which would be suitable in the mixed compositions disclosed therein.

Morgan et al. was cited for the disclosure of flame retardants for polycarbonates, epoxies, and phenol-aldehydes and a particular phosphoramidate disclosed in example 3. It is noted that Morgan et al. does not specifically disclose that the phosphoramidate flame retardants would be suitable for use in mixtures of resins. The Examiner has taken the position that it “would have been prima facie obvious to use any flame retardant in Ohtsuka’s composition for the expected results”.

Claims 1-3, 6, and 7 stand rejected under 35 U.S.C. §103 as unpatentable over Helmond in view of Morgan et al. Helmond discloses a mixture of a saturated polyester resin, an epoxy novolac, a glass reinforcing filler, and a catalyst. The reference teaches the use of flame retardants and that the more important flame retardants contain “e.g. bromine, chlorine, antimony, phosphorous, and nitrogen” (col. 6, lines 53-54). Among the preferred flame retardants are “a halogen-containing organic compound in admixture with a phosphorous compound or compounds containing phosphorous-nitrogen bonds or a mixture of two or more of the foregoing”. Morpholide flame retardants are not disclosed or suggested. Morgan et al. is again relied upon for the disclosure of flame retardants for polycarbonates, epoxies, and phenol-aldehydes and a particular phosphoramidate disclosed in example 3. It is again noted that Morgan et al. does not specifically disclose that the flame retardants would be suitable for use in mixtures of resins.

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The Examiner has taken the position that it “would have been prima facie obvious to use any flame retardant in Helmond’s composition for the expected result”.

Claims 1-18 have been provisional rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over the claims of commonly owned Serial No. 10/480,180 and Serial No. 10/480,056.

Applicants' Traversal

Applicants traverse the rejections and respectfully request reconsideration in view of the following discussion.

Commonly owned Serial No. 10/480,180 is pending and the Applicants of said application have filed a response to a non-final rejection over prior art. Commonly owned Serial No. 10/480,056 is presently under Final rejection. Therefore, Applicants submit that claims 19-26 directed to morpholides of Formula V are allowable.

The Examiner has not established a prima facie case of obviousness of claims 1-3, 6, and 7 over Ohtsuka et al. in view of Morgan et al.

When applying 35 U.S.C. 103, the following tenets of patent law must be adhered to:

- (A) The claimed invention must be considered as a whole;
- (B) The references must be considered as a whole and must suggest the desirability and thus the obviousness of making the combination;
- (C) The references must be viewed without the benefit of impermissible hindsight vision afforded by the claimed invention; and
- (D) Reasonable expectation of success is the standard with which obviousness is determined.

Hodosh v. Block Drug Co., Inc., 229 USPQ 182, 187 n.5 (Fed. Cir. 1986). In *Stratoflex, Inc. v. Aeroquip Corp.*, 713 F.2d 1530, 1537, 218 USPQ 871, 877 (Fed. Cir. 1983), the Court noted that “the question under 35 U.S.C. § 103 is not whether the differences

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[between the claimed invention and the prior art] would have been obvious” but “whether the claimed invention *as a whole* would have been obvious.” (emphasis in original).

MPEP §2143 states the basic requirements of a *prima facie* case of obviousness citing supporting case law:

1. There must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one skilled in the art to modify the references or combine reference teachings. (see MPEP §2143.01)
2. There must be a reasonable expectation of success. (see MPEP §2143.02)
3. The prior art reference (or references when combined) must teach or suggest all of the claim limitations. (see MPEP §2143.03)

The fact that references can be modified or combined is *not* sufficient to establish *prima facie* obviousness. (MPEP §2143.01).

The fact that the claimed invention may be within the capabilities of one of ordinary skill in the art is *not* sufficient by itself to establish *prima facie* obviousness. “A statement that modifications of the prior art to meet the claimed invention would have been ‘well within the skill of the art’ . . . is *not* sufficient to establish a *prima facie* case of obviousness without some objective reason to combine the teachings of the references” (MPEP §2143.01 citing supporting case law).

Differences Between the Prior Art and the Claimed Invention

The factual inquiries for establishing a background for determining obviousness under 35 U.S.C. 103(a) are set forth in set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966) and include determining the scope and contents of the prior art and ascertaining the differences between the prior art and the claims.

The phenol resin derivative, component B of Applicants' claims is a thermoplastic resin whereas the epoxy mixture of Ohtsuka et al. is a thermosetting resin

The combination of Ohtsuka et al. and Morgan et al. does not result in Applicants' claimed compositions since the epoxy resins of Ohtsuka et al. are thermosetting epoxy resins obtained by crosslinking a mixture of a novolac epoxy and phenol formaldehyde (col 2, lines 25-29). Component B of Applicants' claims is a thermoplastic resin and thus different from the thermosetting epoxy resins of Ohtsuka et al.

There is no motivation or suggestion in Ohtsuka et al. to use the morpholide flame retardants of Morgan et al. to result in Applicants' claimed compositions.

Ohtsuka et al. do not disclose any specific type of flame retardant that would be suitable for use in their particular composition. There is no teaching in the reference that would motivate one skilled in the art to combine the teaching of Morgan et al. to select the morpholide flame retardants for use in Ohtsuka et al. The fact that references can be modified or combined is *not* sufficient to establish *prima facie* obviousness. Therefore, Applicants submit that there is no objective reason that would motivate one skilled in the art to select morpholide compounds as flame retardants from the many phosphoroamidates of Morgan et al. except for the disclosure in the present application. Morgan et al. disclose lengthy lists of possible "natural and synthetic polymer materials" in which their phosphoramidates could be used as flame retardants. Although thermoplastic resins, epoxy resins, and phenol aldehyde resins are individually disclosed, Applicants note that there is no teaching in Morgan et al. that their flame retardants could be used in mixtures of different types of resins. Therefore, Morgan et al. do not provide motivation to combine its disclosure with that of Ohtsuka et al. which is directed to specific mixtures of crosslinked thermosetting epoxy resins with thermoplastic resins.

The Examiner has not provided any reasons why there would be a reasonable expectation of success from the use of the morpholides of Morgan et al. in the compositions of Ohtsuka et al.

The Examiner concludes that the use of the morpholides of Morgan et al. in the compositions of Ohtsuka et al. would provide “the expected results”, but does not provide the objective basis or technical reasoning for the conclusion. Ohtsuka et al. do not disclose any specific flame retardants for its particular mixtures. Morgan et al. disclose lengthy lists of possible resins but do not disclose the use of their flame retardants in mixtures of resins.

It is known in the art that the combination of resins affects the reaction of the resulting composition to burning as well as other physical and chemical properties of the individual resins. The presence of other materials can also affect the properties of a resin mixture. Applicants submit that there is no evidence or technical reasoning supporting a reasonable expectation of success obtaining flame retardancy of the mixtures of Ohtsuka et al. while *maintaining* the desired properties of the mixtures such as the granular surface appearance if the morpholide flame retardants of Morgan et al. were used in the mixtures of Ohtsuka et al. Therefore, Applicants submit that no reasonable expectation of success has been established by the references or technical reasoning.

There is no motivation or suggestion in Helmund to use the morpholide flame retardants of Morgan et al. to result in Applicants’ claimed compositions.

Helmund disclose the use of flame retardants which “contain chemical elements employed for their ability to impart chemical resistance” including phosphorous and nitrogen (col. 6, lines 52-54). However, the preferred flame retardants are halogenated organic compound alone or “in admixture with a phosphorous compound or compounds containing phosphorous-nitrogen bonds or a mixture of two or more of the foregoing” (col. 5, lines 57-60). As acknowledged by the Examiner, there is no teaching of morpholide compounds as flame retardants. There are no examples of compositions containing any flame retardants in Helmund. Although red phosphorous and triphenyl phosphate are disclosed as possible phosphorous-containing flame retardants (col. 7, lines 9-13, there is no disclosure of any phosphorous-nitrogen flame retardants. Applicants submit that there is nothing in Helmund that would motivate one skilled in the art to

combine the teaching of Morgan et al. to select the morpholide flame retardants for use in the compositions of Helmund. The fact that references can be modified or combined is *not* sufficient to establish *prima facie* obviousness. Therefore, Applicants submit that there is no objective reason that would motivate one skilled in the art to select morpholide compounds as flame retardants from the lengthy list of phosphoroamidates of Morgan et al. except for the disclosure in the present application.

Morgan et al. disclose lengthy lists of possible "natural and synthetic polymer materials" in which their phosphoramidates could be used as flame retardants. Although thermoplastic resins, epoxy resins, and phenol aldehyde resins are individually disclosed, Applicants note that there is no teaching in Morgan et al. that their flame retardants could be used in mixtures of different types of resins. Therefore, Morgan et al. do not provide motivation to combine its disclosure with that of Helmund which is directed to specific mixtures of a saturated polyester resin, epoxy novolac and a catalyst.

The Examiner has not provided any reasons why there would be a reasonable expectation of success from the use of the morpholides of Morgan et al. in the compositions of Helmund

The Examiner concludes that the use of the morpholides of Morgan et al. in the compositions of Helmund would provide "the expected results", but does not provide the objective basis or technical reasoning for the conclusion. Helmund generally discloses flame retardants containing phosphorous or phosphorous-nitrogen bonds. However, halogenated flame retardants or mixtures thereof with phosphorous and/or phosphorous-nitrogen flame retardants are preferred. The only phosphorous flame retardants disclosed by Helmund are red phosphorous and triphenyl phosphate. There is no evidence or technical reasoning to support a reasonable expectation that the use of morpholide flame retardants would provide flame retardancy without affecting the improved hydrolytic stability required by the reference.

Morgan et al. disclose lengthy lists of possible resins but do not disclose the use of their flame retardants in mixtures of resins. Helmund discloses that the combination of the

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polyester resin with an epoxy novolac and a catalyst resulted in improved hydrolytic stability (col. 1, lines 52-55). It is known in the art that the combination of resins affect the reaction of the resulting composition to burning as well as other properties of the individual resins. Applicants submit that there is no evidence or technical reasoning supporting a reasonable expectation of success obtaining flame retardancy of the mixtures of Helmund while *maintaining* the greatly improved hydrolytic stability of the resin mixture if the morpholide flame retardants of Morgan et al. were used in the mixtures of Helmund. Therefore, Applicants submit that no reasonable expectation of success has been established by the references or technical reasoning.

The dependent claims are patentable over the prior art cited by the Examiner since the *prima facie* case of obviousness has not been established for the independent claim

The dependent claims rejected over the prior art are preferred embodiments of the compositions of claim 1. Since a *prima facie* case of obviousness had not been established against claim 1, Applicants submit that the dependent claims are allowable over the prior art.

Applicants submit that a review of the prior art of record as a whole shows that the claims in the present application meet the requirements for patentability. It is respectfully requested that the Examiner reconsider his rejections of the claims and allow claims 1-3, 6-13, and 16-26.

Respectfully submitted,

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